

Claim Amendments

The following listing of claims replaces all prior versions and listings of claims in the present application.

1. (Currently Amended) A two-way valve comprising:
a body in which a fluid passage for flowing a fluid is formed;
a piston which is provided in said body displaceably in an axial direction by a pilot pressure;
a shaft which is integrally connected to said piston;
a first diaphragm which is connected to one end of said shaft and which closes said fluid passage when said first diaphragm is seated on a valve seat formed on said body; and
a second diaphragm which is axially attached so that said second diaphragm is coaxially superimposed on said first diaphragm and which is provided displaceably together with said first diaphragm,
wherein a space is formed between a first skirt section of said first diaphragm extending radially outwardly and a second skirt section of said second diaphragm extending radially outwardly, and an elastic member is arranged in said space, said elastic member comprising a buffering spring member which is corrugated with a plurality of corrugations extending in a direction from an inner circumferential side to an outer circumferential side of said first diaphragm and said second

diaphragm, for urging said first skirt section and said second skirt section to separate from each other, and wherein said plurality of corrugations of said buffering spring member are interposed in said space between said first skirt section and said second skirt section, so that ridge portions of said plurality of corrugations contact a wall surface of said first skirt section and a wall surface of said second skirt section, and said space permeates through plural groove portions of said plurality of corrugations.

2. (Canceled).

3. (Canceled).

4. (Currently Amended) The two-way valve according to ~~claim 3~~ claim 1, wherein said buffering spring member is formed of the same resin material as a resin material of the first diaphragm and the second diaphragm.

5. (Canceled).

6. (Original) The two-way valve according to claim 1, wherein said body is provided with a detecting section which detects a pressure value of said fluid when said fluid, which flows through said fluid passage, leaks out.

7. (Currently Amended) The two-way valve according to claim 6, wherein said body is formed with a connecting port which ~~{is communicated}~~ communicates with said detecting section, and a check valve is provided in said connecting port, said check valve ~~{is}~~ being displaceable by pressure of said fluid discharged from said body.

8. (Currently Amended) The two-way valve according to claim 1, wherein said second diaphragm is retained by a holding section of a holding member which is axially attached to said shaft, said holding section ~~{is}~~ being expanded radially outwardly.

9. (Original) The two-way valve according to claim 1, further comprising a housing which is connected to an upper portion of said body, and a spring made of metal disposed in a chamber which is formed between said housing and said piston provided displaceably in said housing, wherein said spring urges said first diaphragm in a direction to be seated on said valve seat.

10. (Currently Amended) The two-way valve according to claim 9, wherein a connecting member is installed to said chamber and is connected to a nitrogen gas supply source, and nitrogen gas is supplied into said chamber via said connecting member.

11. (Original) The two-way valve according to claim 1, wherein a chemical solution for washing semiconductor chips flows through said fluid passage.

Add the following new claims.

12. (New) A two-way valve comprising:
a body in which a fluid passage for flowing a fluid is formed;
a piston which is provided in said body displaceably in an axial direction by a pilot pressure;
a shaft which is integrally connected to said piston;
a first diaphragm which is connected to one end of said shaft and which closes said fluid passage when said first diaphragm is seated on a valve seat formed on said body; and
a second diaphragm which is axially attached so that said second diaphragm is coaxially superimposed on said first diaphragm and which is provided displaceably together with said first diaphragm,
wherein a space is formed between a first skirt section of said first diaphragm extending radially outwardly and a second skirt section of said second diaphragm extending radially outwardly, and
wherein said second diaphragm is retained by a holding section of a holding member which is axially attached to said shaft, said holding section being expanded radially outwardly.

13. (New) The two-way valve according to claim 12, wherein an elastic member is arranged in said space, and said elastic member urges said first skirt section and said second skirt section to separate from each other.

14. (New) The two-way valve according to claim 13, wherein said elastic member comprises a buffering spring member which is corrugated in a direction from an inner circumferential side to an outer circumferential side of said first diaphragm and said second diaphragm.

15. (New) The two-way valve according to claim 14, wherein said buffering spring member is formed of the same resin material as a resin material of the first diaphragm and the second diaphragm.

16. (New) The two-way valve according to claim 14, wherein a corrugated portion of said buffering spring member is interposed between said first diaphragm and said second diaphragm so that said portion contacts a wall surface of said first diaphragm and a wall surface of said second diaphragm.

17. (New) The two-way valve according to claim 12, wherein said body is provided with a detecting section which detects a pressure value of said fluid when said fluid, which flows through said fluid passage, leaks out.

18. (New) The two-way valve according to claim 17, wherein said body is formed with a connecting port which communicates with said detecting section, and a check valve is provided in said connecting port, said check valve being displaceable by pressure of said fluid discharged from said body.

19. (New) The two-way valve according to claim 12, further comprising a housing which is connected to an upper portion of said body, and a spring made of metal disposed in a chamber which is formed between said housing and said piston provided displaceably in said housing, wherein said spring urges said first diaphragm in a direction to be seated on said valve seat.

20. (New) The two-way valve according to claim 19, wherein a connecting member is installed to said chamber and is connected to a nitrogen gas supply source, and nitrogen gas is supplied into said chamber via said connecting member.

21. (New) The two-way valve according to claim 12, wherein a chemical solution for washing semiconductor chips flows through said fluid passage.

22. (New) A two-way valve comprising:
a body in which a fluid passage for flowing a fluid is formed;

a piston which is provided in said body displaceably in an axial direction by a pilot pressure;

a shaft which is integrally connected to said piston;

a first diaphragm which is connected to one end of said shaft and which closes said fluid passage when said first diaphragm is seated on a valve seat formed on said body; and

a second diaphragm which is axially attached so that said second diaphragm is coaxially superimposed on said first diaphragm and which is provided displaceably together with said first diaphragm,

wherein a space is formed between a first skirt section of said first diaphragm extending radially outwardly and a second skirt section of said second diaphragm extending radially outwardly, and

wherein a chemical solution for washing semiconductor chips flows through said fluid passage.

23. (New) The two-way valve according to claim 22, wherein an elastic member is arranged in said space, and said elastic member urges said first skirt section and said second skirt section to separate from each other.

24. (New) The two-way valve according to claim 23, wherein said elastic member comprises a buffering spring member which is corrugated in a direction from an inner circumferential side to an outer circumferential side of said first diaphragm and said second diaphragm.

25. (New) The two-way valve according to claim 24, wherein said buffering spring member is formed of the same resin material as a resin material of the first diaphragm and the second diaphragm.

26. (New) The two-way valve according to claim 24, wherein a corrugated portion of said buffering spring member is interposed between said first diaphragm and said second diaphragm so that said portion contacts a wall surface of said first diaphragm and a wall surface of said second diaphragm.

27. (New) The two-way valve according to claim 22, wherein said body is provided with a detecting section which detects a pressure value of said fluid when said fluid, which flows through said fluid passage, leaks out.

28. (New) The two-way valve according to claim 27, wherein said body is formed with a connecting port which communicates with said detecting section, and a check valve being provided in said connecting port, said check valve being displaceable by pressure of said fluid discharged from said body.

29. (New) The two-way valve according to claim 22, wherein said second diaphragm is retained by a holding section of a holding member which is axially attached to said shaft, said holding section being expanded radially outwardly.

30. (New) The two-way valve according to claim 22, further comprising a housing which is connected to an upper portion of said body, and a spring made of metal disposed in a chamber which is formed between said housing and said piston provided displaceably in said housing, wherein said spring urges said first diaphragm in a direction to be seated on said valve seat.

31. (New) The two-way valve according to claim 30, wherein a connecting member is installed to said chamber and is connected to a nitrogen gas supply source, and nitrogen gas is supplied into said chamber via said connecting member.